COURSE OUTLINE

Course Number		Course Title		Credits
OHT 241		**Equipment and IPM**		**3**
Hours: Lecture/Lab/Other		**Co- or Pre-requisite**		**Implementation Semester & Year**
2/2/0		**OHT 102 or permission of program coordinator**		**Spring 2023**

Catalog description: Review of the equipment and procedures used in horticultural settings with an emphasis on pest management. Topics include theories of and strategies for integrated pest management, pest identification, application of pesticides, calibration of equipment, and equipment operation.

General Education Category:	**Course Coordinator:**
Not GenEd	Professor Amy Ricco riccoa@mccc.edu 609-570-3372

Required texts & Other materials:

Course Student Learning Outcomes (SLO):

Upon successful completion of this course, the student will be able to:

1. Identify major insects, weeds, diseases, and other pests that are detrimental to every aspect of the horticulture industry. [Supports ILG #10 ; PLO #1]
2. Define Integrated Pest Management. [Supports ILG #1 ; PLO #5]
3. Implement a successful Integrated Pest Management program. [Supports ILG #11 ; PLO #5]
4. Identify and use a wide variety of chemical, biological, cultural, mechanical, and preventative control methods for greenhouse and nursery crops. [Supports ILG #5 ; PLO #3, 4]
5. Calibrate sprayers and spreaders for the application of grass seed, fertilizers, and pesticides. [Supports ILG #2, 11 ; PLO #3]
6. Become familiar with various pieces of equipment such as skid steers, loaders, sod cutters, arborist equipment etc. [Supports ILG #4 ; PLO # 1]
7. Demonstrate safe mixing and application of pesticides. [Supports ILG #11 ; PLO # 3]
8. Identify possible jobs that are available in the field of Integrated Pest Management. [Supports ILG #1 ; PLO #5]
9. Understand and use economic thresholds. [Supports ILG #3 ; PLO #5]
10. Calculate growing degree days. [Supports ILG #2 ; PLO #5]
11. Identify the steps necessary for obtaining your pesticide applicators license. [Supports ILG #1 ; PLO #5]
12. Perform various Integrated Pest Management sampling techniques. [Supports ILG #3 ; PLO # 5]

13. Identify common predators and parasites. [Supports ILG #10 ; PLO #5]

14. Use general management strategies such as proper plant, soil, and fertilizer selection. [Supports ILG #3, 11 ; PLO # 3]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.
Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
Institutional Learning Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
Institutional Learning Goal 9. Ethical Reasoning and Action. Students will understand ethical frameworks, issues, and situations.
Institutional Learning Goal 10. Information Literacy: Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.
Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for AAS Ornamental Horticulture (PLO)

1. Identify, propagate, and care for at least 300 different woody and herbaceous plant specimens;
2. Implement a soils management plan using modern irrigation and nutrient control techniques;
3. Properly apply common pesticides and fertilizers to achieve optimum growing conditions for plants and crops;
4. Produce and manage common greenhouse crops;
5. Practice integrated pest management.

Units of Study in Detail – Unit Student Learning Outcomes:

Unit I Introduction to Integrated Pest Management; Scouting and Monitoring Techniques; Developing a Scouting Plan (Supports SLO #2, 4 and 12)

Learning Objectives
The student will be able to:

- Define Integrated Pest Management.
- Identify the six management categories of IPM and give example of each.
- Design a scouting form for our greenhouse and use it to monitor insect populations.

Unit II Using Tools to Make Decisions**:** Economic Injury Levels, Economic Thresholds, Pest Resurgence, Pest Replacement, Growing Degree Day Calculations, Plant Phenological Indicators, Resistance, etc. (Supports SLO #9 and 10)

Learning Objectives
The student will be able to:

- Define Economic Injury Level, Economic Threshold, Pest Resurgence, and Pest Replacement.
- Identify the various ways resistance occurs and ways to prevent it.

- Utilize Growing Degree Day Calculations and Plant Phenological Indicators to predict pest emergence.

Unit III Mechanical and Chemical Management Techniques (Supports SLO #4, 5, 7 and 11

Learning Objectives
The student will be able to:

- Recognize the mechanical techniques that are used in pest management.
- Interpret the information found on a pesticide label and on a safety data sheet.
- Understand the federal and state laws related to pesticide usage.
- Demonstrate sprayer and spreader calibration.
- Identify the requirements for obtaining and maintaining a pesticide license.

Unit IV Biological and Behavioral Management Techniques (Supports SLO #4 and 13)

Learning Objectives
The student will be able to:

- Understand how beneficial insects, beneficial nematodes and beneficial microorganisms play a critical role in pest management.
- Select and release beneficial organisms in a greenhouse environment.
- Recognize and utilize olfactory, auditory, and visual management techniques in an outdoor setting.

Unit V Cultural and Preventative Management Techniques (Supports SLO #4 and 14)

Learning Objectives
The student will be able to:

- Recognize ways to prevent pests in the landscape, greenhouse, nursery and turf environments.
- Understand the ways to manipulate the growing environment to minimize pests.

Unit VI Proper Equipment Usage (Supports SLO #5 and 6)

Learning Objectives
The student will be able to:

- Demonstrate safe and proper equipment usage.

Unit VII Introduction to the Development and Implementation of IPM Programs (Supports SLO #3 and 8)

Learning Objectives
The student will be able to:

- Apply the principles of IPM to develop and implement an IPM program.

Unit VIII Common Insect Pests: Identification and Management (Supports SLO #1 and 4)

Learning Objectives
The student will be able to:

- Identify and manage common insects found in greenhouses and landscapes using IPM.

Unit IX Common Disease Pests: Identification and Management (Supports SLO #1 and 4)

Learning Objectives
The student will be able to:

- Identify and manage common diseases found in greenhouses and landscapes using IPM.

Unit X Common Weed Pests: Identification and Management (Supports SLO #1 and 4)

Learning Objectives
The student will be able to:

- Identify and manage common weeds found in greenhouses and landscapes using IPM.

Unit XI Common Animal Pests: Identification and Management (Supports SLO #1 and 4)

Learning Objectives
The student will be able to:

- Identify and manage common animals found in greenhouses and landscapes using IPM.

Evaluation of Student Learning: [Evaluates SLO's #1 – 14]

Achievement of the course objectives will be evaluated by the following tools:

- Weekly quizzes based on lecture material.
- A midterm and a final exam.
- A comprehensive IPM project.
- Completing lab reports to reinforce concepts.

Students will be evaluated based on the following point system.

Midterm Exam	150
Final Exam	150
Weekly Quizzes	100
Reports	100
Final Project	100
Total	600